

## ISOLATION AND IDENTIFICATION OF YEASTS FROM BUTTER SAMPLES

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### ABSTRACT

A Study was carried out to isolate and indentified yeast from butter samples procured from local market. Out of 30 butter samples, 29 isolates of yeast were recovered. Six different genera of yeast were identified from the samples under study. Out of total 29 isolates maximum 18 (62.06%) of genus *Candida* were found, followed by 4 (13.79%) of *Rhodotorula*, 3 (10.34 %) of *Debaryomyces*, 2 (6.89 %) of *Kluyveromyces*, and one each (3.44%) of genus *Saccharomyces* and *Geotrichum*.

**KEYWORDS:** Butter, Yeast, Milk Producus

### INTRODUCTION

Bacteria, yeasts and moulds play an important role in determining the quality of the finished dairy product. Most of the milk products are sterile when fresh; mostly it is the post manufacture contamination that deteriorates their quality. The Indian environmental humidity and temperature and the conditions, under which dairy products are manufactured, shelved and marketed, may render them highly susceptible to contamination by different types of infectants, consequent loss in economic value due to spoilage and dangerous from public health point of view (Natarajan and Nambudripad, 1981).

### MATERIALS AND METHODS

Total 30 fresh butter samples locally prepared (showing no visual mould contamination) were purchased, from retail outlets in Mhow and Indore markets and transported in sterilized cold conditions. Isolation was carreid out on PDA medium containing chloramphenicol (50-100 mg/l) and further identified on the basis of the colony characteristics, staining characters (Gram's method and negative staining), different biochemical tests and other characters (APHA, 1960; Jungerman and Schwartzman, 1972; Lodder, 1974; Emmons *et al.*, 1977; Cheesbrough, 1985; Clayton and Midgley, 1988; Collee *et al.*, 1996; Forbes *et al.*, 1998).

### RESULTS AND DISCUSSION

The total yeast counts of butter samples ranged between 8.70- 53.20 x 10<sup>3</sup> cfu/gm. Out of 30 samples, 29 yeast isolates were recovered. Yeasts belonging to 6 different genera were isolated and identified from samples analyzed. The yeast colonies of most of the genera on PDA were white to cream in colour. On Levine EMB agar *Candida albicans* produced typical spider like colonies within 2-4 days. *Geotrichum* spp which are classified in group – yeast like fungi produced very thin creamish white colonies. Microscopically, yeast organisms were oval to round shape, showing budding cells, Gram positive and colourless in negative staining. In sugar fermentation reaction (using glucose, galactose, lactose, maltose, raffinose, sucrose and trehalose sugar discs), the positive results were indicated by change of colour of broth from purple to yellow. In sugar assimilation test (using sugars arabinose, glucose, galactose, lactose, maltose, mannitol, raffinose, sucrose, trehalose and xylose), organisms showed thick growth around the sugar discs which was assimilated by the organism whereas no growth was seen around the sugar which was not assimilated. Nitrate reduction positive results were also indicated by change of colour to pink from yellow. In serum (37°C for 2-3 h) germ tube formation as small sprouts were observed in positive

cases. The yeast cultures when inoculated deep in chlamyospore agar at 15-22°C for 7-8 d formed profuse mycelial growth and microscopically thick walled large sized chlamyospores in lactophenol cotton blue stain were seen.

Out of total 29 yeast isolates, the maximum number, 18 (62.06%) of genus *Candida* were found, followed by 4 (13.79%) number of *Rhodotorula*, 3 (10.34 %) number of *Debaryomyces*, 2 (6.89 %) number of *Kluyveromyces*, and one each (3.44%) of genus *Saccharomyces* and *Geotrichum*. Sagdic *et al.* (2010) isolated 49 yeast species from butter samples belonging to genera *Candida*, *Cryptococcus*, *Rhodotorula*, *Saccharomyces* and *Zygosaccharomyces*.

Majority of milk products become unsafe before reaching the consumers. The presence of yeast in milk products is important from spoilage as well as pathogenic point of view (Subramanian and Shankar, 1983, Nehra *et al.*, 2003). Thus, microorganisms can cause a great economic loss as well as serious health hazards especially in immunocompromised patients when contaminated products are consumed.

In the present study, high percentage and various genus of yeast were recovered from butter samples. Butter which is stored at refrigerated temperatures for long durations (weeks) in retail shops usually and may pose health hazards to the consumers due to unseen fungal organisms as also suggested by Natarajan and Nambudripad (1981).

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